

Oral Candidiasis: An Opportunistic Infection of AIDS

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Candida albicans (*C. albicans*) is an opportunistic fungal species commonly colonizing human mucosal surfaces. However, when host defenses are weakened, *C. albicans* can proliferate causing an array of infections ranging from mucosal to systemic infections that are often life-threatening. Specifically, oral candidiasis is considered an AIDS-defining opportunistic infection with up to 80% of HIV+ individuals suffering recurrent episodes during the course of their HIV disease progression. As a dimorphic microbial species, *C. albicans* is capable of switching morphology between yeast and hyphal forms. Where the yeast form is responsible for systemic disease, hyphae are invasive filaments and therefore are adept at causing mucosal infections. The mouse model is the most suitable animal model to study the development of oral candidiasis due to the similarity to the disease process in humans. (A) Following anesthesia, animals are infected sublingually using swabs saturated with *C. albicans* cell suspensions. (B) Five days post-infection, white lesions are seen on tongue surface rapidly developing into overt candidiasis characterized by white plaques covering the tongue and other oral surfaces. In order to visualize the process of tissue invasion by *C. albicans*, animals are euthanized and the tongues are harvested and subjected to histopathology analysis where tongue tissue are embedded in paraffin, sectioned and stained with Periodic Acid Schiff stain then examined by light microscopy. (C) Microscopic images of tissue sections demonstrate the extensive presence and penetration of epithelial tissue by the invasive *C. albicans* hyphae (white arrows) with massive influx of host immune cells (yellow arrows). Tongues were also subjected to scanning electron microscopy analysis. (D) Magnified (5000x) images of the tongue surface demonstrate penetration of hyphae from the sublingual area where *C. albicans* is inoculated leaving sizable gaps at sites of emergence of the hyphae through the tongue surface (red arrows). This extensive tissue invasive process by *C. albicans* hyphal elements is manifested clinically as white lesions characterizing oral candidiasis.

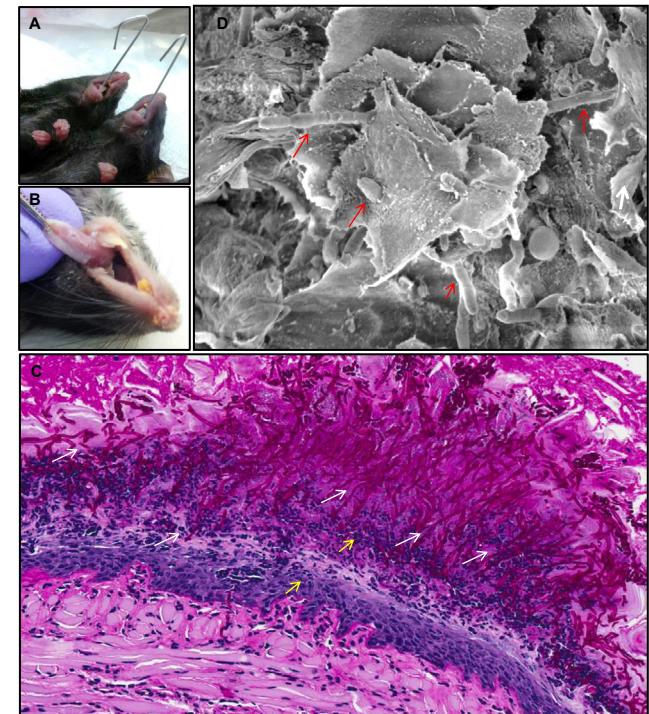


Figure 1

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